

REMARKS

I. Status of the Claims

Claims 3-5, 7-8, 10-12, 15-17, 19, 20, 22-23, 25, 28-30, 33, 34, and 37-41 are pending in the application. Claims 7, 16, 20, and 37-41 are independent claims. Claims 1, 2, 6, 9, 13-14, 18, 21, 24, 26, 27, 31, 32, 35 and 36 have been cancelled. The independent claims have been amended to recite a volume of colorant plus carrier combined per gram of the fat or wax base. Claim 29 has been amended to address an inconsistency in the range (see original paragraph [0041]). No new matter has been added. Applicants respectfully request reconsideration in view of the foregoing amendment and the following remarks.

II. Rejections Over Prior Art

All of the claims have been rejected over U.S. Patent Application Publication No. 2003/0101902 A1 (hereinafter "Reitnauer"), in view of U.S. Patent No. 6,450,615 B2 (hereinafter "Kojima"), for the reasons of record.

Reitnauer is directed to a "hot melt" wax-based ink. The examples describe an oil-soluble colorant dissolved in medium chain triglycerides (MCT) oil. Whereas, the applicants have argued that the amended claims are directed to ink systems having a water-based colorant in a fat or wax dispersible carrier for the colorant, the Office Action points to Reitnauer paragraph [0026] as teaching water-based colorants, and takes the position that the disclosure of glycerin additive (in paragraph [0031] for example), makes obvious a wax dispersible carrier for the colorant (notwithstanding that glycerin may only be present as a flexibilizer, for example), because "once the components of the ink composition have been combined, including glycerin, . . . all the

components are part of the carrier for the colorant” (Office Action, page 4). However, Applicants respectfully submit that the claimed edible ink, including a water-based colorant in a fat or wax dispersible carrier present in a specified combined amount with respect to the fat or wax base, is not obvious in view of the references, for the reasons set forth below.

III. Arguments

As amended, the claims further distinguish Reitnauer, in that the volume of the carrier and colorant combined in the ink is 0.09 to 0.45 mL per gram of the fat or wax base. The claimed relationship is obtained from Table 2 by dividing the “volume of saturated solution (mL)” column by the “amount of fat (g)” column (see Table 2, pages 14-15; *see also* the discussion in paragraph [0026] and original claim 15, where the colorant is stated as being present at or near the solubility limit of the carrier for the colorant). By contrast, there is no “carrier” in Reitnauer (as that term could be reasonably construed) present with the colorant in the required amount with respect to the wax base. Clearly, it would not have been obvious to provide a combination of glycerin, for example, and colorant, in the stated amount, based on the disclosure in Reitnauer, because Reitnauer does not disclose that glycerin serves as a carrier for a water-based food coloring in a wax base.

Moreover, there is a well recognized meaning for “carrier” in this context, a well-recognized role that a carrier plays in a multicomponent system, and specific carrier-substrate interactions that would be taken into account by the person of ordinary skill. Table 2 shows that the carrier-substrate interaction may be different for each carrier-substrate pair. For each pair of colorant and carrier shown in Table 2, colorant

was incorporated into the carrier at the maximum solubility limit to create a saturated solution. However, the maximum solubility limits differ, indicating a unique interaction between the colorant and the carrier, in each case.

Reitnauer does not teach one of ordinary skill in the art how to disperse a water soluble colorant in a fat or wax base to make an ink. The case law makes clear that absent some known or obvious way to make a composition, the composition is not in the possession of the public. *In re Hoeksema*, 158 U.S.P.Q. 596 (C.C.P.A. 1968), *see also* the *In re Payne* and *Beckman Instruments* cases cited by applicants in the previous response. It is incorrect in the present case to base an obviousness rejection on a combination of elements in Reitnauer where there is no obvious way to combine them to make the claimed composition.

An important aspect of the present invention is the use of a carrier to facilitate incorporation of a water-soluble colorant into a fat or wax base. The technical challenge posed is recognized, for example, at paragraph [0025] (“one technical challenge is to ensure the dispersion of the colorant in the fat or wax base”), and in paragraph [0029] (“as the FD&C dyes and natural colorants are water soluble, solubilizing the dyes in a carrier that is compatible with a wax poses a significant technical challenge.”

The present specification describes the requirements of a good carrier in paragraph [0033], including the requirement for the solubility of the carrier for the colorant. “Preferably, colorant is added to the carrier in an amount close to the solubility limit of the carrier for the [*solvent sic*, colorant]” (page 10). See also, paragraph [0026]. “The important characteristics of the carrier system are that it be able to disperse or

dissolve the colorant and that it be compatible with the fat phase. Preferably FD&C colorant is soluble in the carrier at least to the extent of 1 gram per 100 ml, more preferably greater than 5 grams per 100 ml and most preferably greater than about 18 grams per 100 ml. Polyols have a good balance of fat-compatibility and solubility for most of the colorants.” (Paragraph [0033]).

Moreover, whereas Reitnauer teaches only adding with stirring or dispersing colorant into a molten mixture of all the other ink components (Reitnauer, paragraph [0032]), the present specification explains the preparatory process step for dispersing a water-based colorant into the fat or wax base: “The colorant is dissolved or dispersed in the carrier, which is then dispersed into the fat or wax phase.” (Paragraph [0033]).

In summary, Reitnauer does not disclose a colorant in a wax or fat dispersible carrier for the colorant or a corresponding method of making. The wax based inks disclosed in Reitnauer contain a wax soluble colorant. In each of the Examples, the colorant is apocarotenal, a water insoluble dispersion in medium chain triglycerides (MCT). Although there is a list of dyes and pigments, including some water-based colorants, at paragraph [0025], Reitnauer does not teach how to disperse a water soluble colorant into a fat or wax base using a carrier for the colorant, and under the case law, the proposed combination cannot be said to be obvious, without an obvious way to make it.

Kojima, on the other hand, merely teaches properties of hot melt inks, including a viscosity in the range of 8-15 cP, a surface tension in a range of 10 and 70

dynes/cm, and apparently in some cases, an image resolution achieved of 300 dpi.¹ Kojima does not teach that printing can be performed on an edible substrate, such as a sugar shell confectionery, or that edible inks can be formulated to meet the requirements of the disclosed printhead. In particular, Kojima does not disclose compatibility of an edible wax based ink for a wax polished sugar shell surface, characterized by a contact angle, for example. Neither reference provides the motivation to make the asserted combination, adapting edible inks as purportedly disclosed in Reitnauer for use with the printing apparatus of Kojima.

Applicants note that the Examiner initially agreed that Reitnauer does not teach how to disperse a water soluble colorant into a fat or wax base using a carrier for the colorant. This was stated in the Office Action dated September 26, 2006 at page 4. The statements in the present Office Action, wherein the Examiner now disagrees with the argument, “that Reitnauer does not teach a water soluble colorant into a fat or wax base using a carrier for the colorant,” is a complete about face, and no reasons are given for the change. Although Reitnauer discloses an FD&C colorant in a list of colorants, that does not make it obvious that such colorant could have been incorporated into a fat or wax dispersible carrier before being added to the wax. There is certainly no disclosure in Reitnauer that would have made obvious a polyol carrier (as set forth in claim 8) or a colorant present at or near the solubility limit of such carrier (as set forth in claim 15).

Moreover, Applicants have relied repeatedly on similar indications of allowable subject matter, in an Office Action dated July 15, 2004, and again in the Office

¹ Note that Reitnauer’s examples teach an ink viscosity of 22.4 at 135° C (See Examples 3 and 4, paragraph [0044]). Thus Reitnauer is both outside the claimed range, and incompatible with Kojima.


Action dated January 11, 2005. Applicants respectfully submit that, at this point, detailed remarks are in order concerning the rationale for combining a water-based colorant and fat or wax dispersible carrier in an ink as set forth herein.

Applicants particularly request that the individual limitations in the dependent claims be given consideration. Claim 15, for example, recites that the colorant is present near the solubility limit for the colorant in the carrier. Claim 8 recites that the carrier is a polyol. These dependent claims should be reconsidered in light of the added limitation in the independent claims, that the carrier and colorant are provided in a specified amount with respect to the fat or wax base. Likewise, Reitnauer and Kojima are both devoid of any disclosure teaching a contact angle of less than about 50 degrees on a wax polished confectionery surface. Claim 20 is a method claim, setting forth a resolution achieved greater than 100 dpi. Dependent Claim 25 specifically recites a confectionery substrate, and dependent Claim 30 specifically recites steps for conveying confectionery pieces past a printhead in a stationary position in pockets. Neither Kojima nor Reitnauer discloses any such steps for obtaining a high resolution image on a confectionery piece. These claim limitations also should be given full consideration.

Applicants respectfully submit that the independent claims are allowable over the prior art of record for the reasons stated above. Each of the remaining claims, not specifically discussed above, including the dependent claims, incorporates one or more of the limitations discussed above, and should be found allowable over the art of record, for at least the reasons discussed above. Careful reconsideration of each claim, including each dependent claim, is respectfully requested.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,


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